600
C 15 mst
v. 7
No. 1

Montana State Library
3 0864 1006 4843 8

Volume 7, Number 1
June, 1993

Montana Science & Technology Alliance

Department of Commerce

Striving to promote
a partnership between
government, academia & business

Report

STATE DOCUMENTS COLLECTION

JUL 14 1993

MONTANA STATE LIBRARY
1515 E. 6th AVE.
HELENA, MONTANA 59620

MSTA Authorized $11 Million of Permanent Coal Tax Trust for Venture Capital and Research and Development Programs

On April 12, 1993, Governor Marc Racicot signed into law House Bill 394 revising the Montana Science and Technology Financing Act. This statute provides MSTA with $11 million from the Permanent Coal Tax Trust: four-year management authority over $8 million for its venture capital loan program and two-year management authority over $3 million for its research and development loan program. This increases the venture capital fund to $15.5 million and the research and development fund to $8.1 million.

Under the venture capital loan program, emphasis will be placed on new and expanding businesses that the MSTA board determines meet statutory investment criteria. These criteria are modeled to closely reflect private venture capital practices. The legislation will make several changes in the venture capital program. First, up to $1,550,000 may be loaned to any one company over multiple rounds, an increase from the present limit of $750,000. Second, the MSTA board may waive the previously required nine-month period between financing rounds if it determines that there is an overriding financial benefit to the board's portfolio.

New emphasis will be placed on efforts to improve the competitiveness of Montana businesses in the national and international markets...

To date, the Alliance has $5.1 million invested in eleven companies with technologies ranging from biotechnology to laser-optics. MSTA's portfolio companies are presently raising over $20 million in order to accommodate growth and several firms are positioning themselves to conduct an initial public stock offering in the future. Five firms are in various stages of plant, office and laboratory development.

The research and development loan program looks to enhance Montana's research facilities and stimulate the transfer of technology from the laboratory to the marketplace. New emphasis will be placed on efforts to improve the competitiveness of Montana businesses in the national and international markets by promoting the productivity and modernization of Montana companies. Loan funds will be available to university-based centers of excellence, a university-based technology transfer program, Montana companies, and medical research facilities for projects that the MSTA board determines meet statutory financing criteria. The MSTA's research and development program has invested over $6.8 million since its inception. This investment has been successful in leveraging over $89 million in federal and private dollars to continue these research efforts. Positive research results with significant commercial potential have been realized in such areas as clean coal, taxol production, environmental clean-up and genetically-engineered animals and plants.

The legislation also moves funding for MSTA's operations from the state's general fund to returns from its investment portfolio. All financings are structured as loans and require repayment. In the future, returns realized from exiting these long-term investments will be sufficient to both underwrite the program's administrative budget and make principal payments to the Permanent Coal Tax Trust.

"Through these financing programs, we hope to provide continued support to technology-based development for the benefit of all Montanans," stated Carl Russell, MSTA executive director. ■

PLEASE RETURN

Montana Science & Technology Alliance

Marc Racicot, Governor
State of Montana

BOARD OF DIRECTORS

Ray V. Tilman, Chairman
Montana Resources, Inc.
Butte, Montana

Tom Breum
Champion International Corporation
Bonner, Montana

William M. Brooke
Moore Law Firm
Bozeman, Montana

Rick A. Hill
R.A. Hill & Company
Helena, Montana

Rebecca W. Mahurin, Ph.D.
Montana State University
Bozeman, Montana

Robert B. Noble III
Jerry Noble Tires
Great Falls, Montana

James A. Stevensan
UniField Engineering, Inc.
Billings, Montana

Rayman F. Thampsan
Semitool, Inc.
Kalispell, Montana

Ken Thuerbach
Alpine Log Homes
Victor, Montana

STAFF

Carl E. Russell
Executive Director

David P. Desch
Senior Investments Manager

Elinar W. Edmunds
Research and Development Manager

Babbie Dixan
Investments Analyst

Rande R. Muffick
Investments Analyst

Cassey Rudia
Program Assistant

Montana Science and Technology Alliance
Department of Commerce
46 North Last Chance Gulch, Suite 2B
Helena, Montana 59620

Telephone: 406-449-2778
FAX: 406-442-0788

New Members Join MSTA Board

During the past year four new members were appointed to the Montana Board of Science and Technology Development. Former Governor Stan Stephens appointed James Stevenson and Robert Noble. Mr. Stevenson is the founder and president of UniField Engineering, Inc., a chemical and environmental engineering services company located in Billings. Mr. Noble, one of the founders and co-owners of Jerry Noble Tires of Great Falls, is the company's vice president.

Governor Marc Racicot appointed two new members: William Brooke and Raymon Thompson. Mr. Brooke is an attorney with the Bozeman-based Moore Law Firm that specializes in business and real estate law. Mr. Thompson is the founder and chief executive officer of Semitool, Inc. and co-founder and chief executive officer of Semitherm, Inc., Kalispell-located companies in the semiconductor products industry.

Governor Racicot also reappointed Tom Breum of Missoula and Ray Tilman of Butte, who serves as chair of the board. These members join Rick Hill of Helena, Rebecca Mahurin of Bozeman, and Ken Thuerbach of Victor on the nine-member board. ■

Update on MSTA's Venture Capital Portfolio Companies

Nurture, Inc.

This Missoula-based company is focusing on cosmetic and over-the-counter pharmaceutical products for its initial markets. The NURTURE system, the company's proprietary technology, utilizes oat-based protein micro-particles for the controlled delivery of a variety of substances. Formulations containing NURTURE prolong the efficacy, reduce the amount, or control the dosage of these ingredients. NURTURE lends itself to incorporation in both solid and liquid formulations, can be applied topically as powders, lotions, or sprays, and is biodegradable and non-toxic.

The company has entered into product development agreements with Monsanto Corporation and Steifel Laboratories, Inc. for specific applications of NURTURE in pesticides, personal care products, food flavor concentrates, and cosmetics. Considerable interest has been shown by major oil companies and government entities in NURTURE's ability to emulsify and disperse oil spills.

Nurture currently employs eleven, and is building a production facility in Missoula. The company is also pursuing a private placement offering of equity shares. This round of financing will provide additional capital for production, marketing, and working capital needs. MSTA has $750,000 invested in the company, which has raised $2 million in equity financing since the Alliance's initial investment. ■

MSTA Hosts Fifth Technology and Entrepreneurship Forum

The fifth Montana Technology and Entrepreneurship Forum is scheduled for Wednesday, July 28, 1993 at Big Sky Resort. Montana companies, entrepreneurs, research organizations and university researchers are encouraged to register to attend.

The morning venture capital session is reserved for investors and will feature presentations from selected high-growth companies actively seeking investment capital. A number of the companies are either MSTA portfolio companies or companies under consideration for MSTA investment capital.

The entrepreneurs' and technologists' village in the afternoon will showcase companies, research organizations, and government agencies. The public is encouraged to visit the village and meet the entrepreneurs and researchers.

Numerous benefits are anticipated from forum activities. Venture investors may invest in companies featured at the morning session. In addition, attendees will have an opportunity to view Montana's entrepreneurial activities by interacting with company representatives in the village display area. Company principals likewise will have an opportunity to investigate various governmental programs which may sponsor research. Finally, entrepreneurs and researchers may develop a network of contacts to assist in ongoing entrepreneurial development in the state.

"We invite companies and research organizations from across the state to participate in the Forum and see firsthand the exciting technologies being researched and commercialized in Montana," stated Carl Russell, MSTA executive director. ■

Lattice Materials Corporation

Lattice continues to gain market acceptance with its metallic crystal optic materials used in infrared laser and imaging systems. Unlike its competitors, who only grow or cut crystals, Lattice Materials manufactures, fabricates, and characterizes its silicon crystals. In 1992, the company added germanium crystals to its silicon product line.

Lattice has a reputation for providing high quality products with rapid turnaround time. The company's products meet the needs of both the commercial and defense industries. While sales have been predominantly to domestic markets, the company has realized revenues in Europe due to its expanded marketing efforts.

MSTA has invested $555,000 in Lattice. The funds were used to expand its crystal growth and fabrication facilities. Lattice has fifteen employees at its facility in Bozeman. ■

TMA Technologies, Inc.

The Alliance has $700,000 invested in this Bozeman-based company, which was founded to develop and market leading-edge light scatter measurement instrumentation. Scatterometers provide measurement and analysis of the intensity, angle, and diffusion of light scatter which can be used to reveal surface characteristics such as position, topography, contamination, interior properties, and defects.

In the past, the research community represented a large majority of TMA's customer base; however, the company is moving into the industrial measurement market. TMA recently sold a number of its Alignment Laser Measurement Systems to Boeing, who plans to use the system to align wing and fuselage sections during aircraft assembly. Other product developments include an engineering contract with Thiokol Corporation to develop an instrument to measure hydrocarbon contamination on surfaces. TMA employs forty-one at its Bozeman facility. ■

UltraFem, Inc.

To date, the Alliance has placed an investment of $700,000 inUltraFem. The company offers an innovative menstrual collection product called the UltraFem Feminine Protection Cup. The UltraFem Cup addresses the shortcomings of current feminine protection products and the customer dissatisfaction resulting from those shortcomings.

UltraFem is headquartered in New York City with its production plant currently under construction in the Missoula area. The Missoula facility, located in a 33,000 square foot building

in Lolo, will house the advanced technology production line and the distribution facilities covering the Western United States. UltraFem is working toward an initial public offering, which is expected to occur in 1993. Product introduction is planned in 1994. ■

Gateway Software Corporation

Gateway, headquartered in Fromberg, develops and markets software for school administration applications (K-12) for use in the IBM AS/400, a mid-range computer. Gateway's principal product is the library management system. The company has released five new K-12 administrative products since the release of the library management system, and has experienced a significant growth in the number of systems installed over last year's level.

Currently employing ten, the company has received $334,150 from the Alliance. ■

Optima Industries, Inc.

At its November 1992 meeting, the MSTA Board voted to place an additional $350,000 in Optima, bringing the Alliance's total investment in the company to $700,000. The company has developed an automated printed circuit board (PCB) drilling machine called the Quantum. The machine is faster, more accurate and more reliable than standard PCB drilling machines. These advantages are attributed to the Quantum's computer driven control system. Optima anticipates a significant presence in the Bozeman area to include sub-assembly production and software/control operations by 1994. ■

Mycotech Corporation

Mycotech Corporation of Butte has developed a proprietary process for production of fungi and fungal-related products. The company's Solid Culture System provides the key production step to economically exploit several commercial opportunities, including applications in the bioremediation and biopesticide markets.

In May of 1992 Mycotech entered into a marketing agreement with Groundwater Technology, Incorporated of Norwood, Massachusetts. The agreement grants Groundwater Technology marketing rights for various waste treatment markets. In addition, Mycotech is active in discussions with major agricultural-chemical companies regarding co-developing and marketing Mycotech's fungal insecticide products.

The Alliance has invested $650,000 in Mycotech, and since the Alliance's initial investment, the company has attracted $3.2 million in equity investment. Mycotech currently employs twenty-two at its facilities in Butte. ■

MSTA venture portfilio companies continue to attract equity capital.

ChromatoChem, Inc.

MSTA has a total investment of $350,000 in ChromatoChem, located in Missoula. The company raised $1.3 million in equity capital since the Alliance's initial investment.

ChromatoChem's technology centers around affinity chromatography, a separations process whereby certain molecules attach themselves to other molecules in order to trap desired products. The company is developing new applications for its affinity chromatography technology and is focusing its efforts on the wastewater treatment market. ■

Employee Managed Care Corporation

In 1988, the Alliance placed a $100,000 investment in Employee Managed Care Corporation (EMC), then known as Health Incentives, Inc. EMC has developed a system, known as CareWise, that provides information and non-directive counseling which enables patients to make informed decisions about health care. CareWise provides improved health care to subscribers as well as reduced medical expenditures.

Since the Alliance's initial investment, company headquarters have been moved to Bellevue, Washington, and the company has raised over $6 million in equity investment capital. EMC maintains a branch office in Missoula and employs fifteen at that location. ■

GeoResearch, Inc.

The Alliance invested $180,000 in this Billings-based company in 1986 to develop and sell units of its Remote Electronic Animal Data System (READS). In 1988, GRI AgriTech was established as a subsidiary of GeoResearch to continue the development and marketing of several computerized agricultural technology product lines developed by the parent firm. AgriTech holds the license to market the READS technology. Presently, GeoResearch employs thirty-five at its facility in Billings. ■

Update of MSTA's Research and Development Portfolio Projects

Center for Biofilm Engineering

The MSTA Board provided $600,000 of the state's $1 million commitment to the center (formerly known as the Center for Interfacial Microbial Process Engineering). The state funds are match for the National Science Foundations's $7.4 million five-year engineering research center award to the center.

This center is a partnership between Montana State University, the Idaho National Engineering Laboratory and nineteen industrial associates. Center researchers investigate ways that microscopic organisms such as bacteria can be either a boon or bane to the efficiency of various industrial processes. Experts in microbiology, chemistry, chemical engineering and industrial processes probe the fundamental ways in which microbes grow on equipment surfaces and at the interfaces between gas, liquid and solid phases.

The NSF designation of the center greatly enhances Montana's research capabilities. The $7.4 million in NSF funds, added to industrial and state support, could combine for a total of $16 million being expended in the state through the center. The center will submit a proposal to NSF requesting increased funding for four additional years. ■

Deaconess Research Institute

In late 1991, MSTA committed $500,000 to the Deaconess Research Institute, a wholly-owned subsidiary of the Deaconess Care Corporation of Billings. The institute was established in 1988 to conduct research in biomedical sciences, to stimulate interest in health sciences among young people and to provide a mechanism for physicians to pursue research interests related to health care delivery.

With the MSTA funding the institute is investigating and developing new therapies for the treatment of osteoporosis, a disease in which the reduction of bone mass is sufficient to cause an increased risk for fractures. The institute has established a research relationship with the University of Washington's Osteoporosis Research Center and is a clinical testing site for several studies on the effects of specific drugs on osteoporosis that are sponsored by major pharmaceutical firms. The institute is also active in the area of animal contraception and has several products under development. Through its research and clinical programs, the institute looks to become an enduring presence in the areas of women's health issues by developing effective treatment protocols. ■

Deaconess Research Institute's DEXA instrument measures bone mineral density, an indication of osteoporosis.

Center of Excellence in Biotechnology

The center received an additional $350,000 commitment in 1992 from MSTA to underwrite biotechnology research projects. The University of Montana serves as the lead institution in cooperation with Montana State University.

The center funds projects judged to have scientific merit and commercial potential. Recent projects include identification and isolation of disease-resistant genes to improve canola; utilization of genetic engineering to develop a herbicide-resistant strain of safflower; drug design of anti-metastic agents; development of resistance to barley yellow dwarf virus in transgenic barley plants; and taxol from Yew-associated microbes.

As part of its efforts to enhance biotechnological expertise, the Center hosted its fifth annual biotechnology/industry collaboration forum at Montana State University in April. Approximately 100 people attended the one-day event which featured a poster session displaying 35 biotechnology projects. ■

Center for Advanced Minerals Processing

The center received an additional commitment for $150,000 in 1992 to underwrite later-stage research projects that meet the center's financing criteria emphasizing scientific merit and commercial potential. Earlier, the center provided first round funding to projects and several of those projects are now under consideration for additional funding.

During 1992, the center revised its mission and research emphasis to address the needs of the state's mineral extraction industry. The center, through cooperation between the

university system and industry, enhances the economy of the state by supporting, developing, and adding value to its mineral industries. This enhancement may be encouraged through extraction of value from minerals and mineral processing wastes, development of processes which minimize waste generation, and assistance in the establishment of new value-adding industries based upon Montana's mineral wealth. ■

Montana Entrepreneurship Center

In mid-1992, the MSTA committed additional funds totaling $220,000 to the Montana Entrepreneurship Center for operational expenses for fiscal year 1993. Financial support is also being provided by U S WEST Foundation, Atlantic Richfield Corporation, Montana Power, and U S WEST Communications.

Through its comprehensive computer database of university system resources, the center continues to link business owners and entrepreneurs with the information, resources and expertise they need to make their ventures operational and efficient. The center operates offices on the campuses of the University of Montana, Montana State University and Eastern Montana College.

The center also provides three other electronic products: a business calendar, centernet, and the Montana Private Capital Network. The calendar, an electronic listing of business activities, conferences and seminars scheduled statewide, is accessible via modem and is published in the monthly business supplement of The Great Falls Tribune. Centernet links the local economic development agencies across the state, enabling them to share information and be more responsive to client needs. The Montana Private Capital Network is housed at the center, and provides a matching service for investors and entrepreneurs (see related article). ■

National Science Foundation EPSCoR II Continuation

In 1992, the MSTA committed $73,783 for continuation funding of the National Science Foundation's experimental program to stimulate competitive research (EPSCoR). The goal of the NSF EPSCoR program is to stimulate systemic and sustainable improvements in the capabilities and competitiveness of universities in order to complete successfully for other federal research and development funds.

In 1980, Montana was designated by NSF as one of the original EPSCoR states. In 1990, Montana received its second award. NSF funds for these two awards totaled $3.7 million. The Montana EPSCOR program is a collaborative effort that spans the university system and includes researchers from the University of Montana, Montana State University, and Montana Tech. An application for additional EPSCoR funding was submitted to NSF in late 1992. ■

Montana Private Capital Network

The Montana Private Capital Network (MPCN) is a nonprofit organization sponsored by corporate donors and the Alliance. Managed by a statewide board of directors, the MPCN's primary purpose is to introduce entrepreneurs to individual investors interested in financing early stage and existing Montana businesses. This introduction is accomplished through the use of a computer-driven system that matches the needs of both investors and entrepreneurs.

The system was switched on in October 1992, and since that time hundreds of matches between investors and entrepreneurs have been made. The MPCN plays an important role in the effort to promote capital formation and investment. ■

MPCN is linking investors and entrepreneurs.

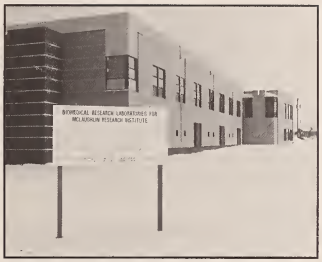
Western Energy Company

In 1986, MSTA placed a $350,000 investment in Western Energy Company (WECO), a subsidiary of Montana Power Company. The funds, matched with an equal amount from the company, were used to conduct a process engineering and design study of a clean coal process. The process creates a low-moisture, low-sulfur, high-Btu coal that meets the requirements of clean air act amendment of 1990 and thereby expands the market for Montana's coal.

In 1990, WECO received $69 million from the U.S. Department of Energy to build a demonstration-scale plant in eastern Montana. Subsequently, WECO joined with NRG Group, a subsidiary of Northern States Power Company, to form Rosebud SynCoal Partnership. The 1,000-ton-per-day facility came on-line in early 1992 and continues to increase production levels. WECO has initiated repayment of the MSTA financing with royalties on its clean coal revenues. ■

McLaughlin Research Institute Moves to New Facility

This June the McLaughlin Research Institute will relocate to its new 42,000 square foot, state-of-the-art research facility. Construction of the facility was made possible by a $2 million state grant and a $5 million federal grant. The facility's location adjacent to the College of Great Falls and near the city's two hospitals will promote sharing of resources. The Alliance funds are being used to cover construction costs, recruit additional scientists and enhance the institute's research capabilities to continue its study of genetic susceptibility to disease. The institute's cutting-edge research is aided by mouse strains developed by and available only at the institute. Research results may lead to major advances in the use of bone marrow transplantation as a treatment of leukemia and other blood disorders, aid in unravelling the complex heredity of cancer, and help prevent or treat brain disorders of later life such as Alzheimer's disease. ■



McLaughlin Research Institute's New Facility

Montana Researchers Find New Taxol Source

A team of researchers, Dr. Andrea Stierle and Dr. Gary Strobel from Montana State University and Dr. Don Stierle from Montana College of Mineral Science and Technology, have discovered a potentially enormous new source for the anticancer drug taxol: a fungus that grows on Pacific yew trees in the state's national forests. The research results were published in an April issue of the international journal, Science. Initial research funding was provided in part by the Alliance's biotechnology center of excellence.

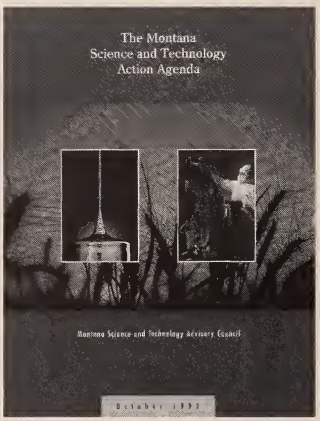
The researchers have shown the fungus can grow in culture dishes without the host tree. The next hurdle is increasing the infinitesimally small amounts of taxol the fungus produces to commercially viable levels. Dr. Andrea Stierle said initial attempts have already increased yield a hundred-fold and that yields have been known to improve 100,000-fold in other fungi. Patents have been filed to protect the technology and discussions are underway with a number of pharmaceutical firms to license the technology for commercialization.

Taxol researchers Don Stierle, Andrea Stierle, and Gary Strobel (clockwise from top)

With time, the discovery could offer a less expensive and more available source for taxol than the expensive process now used to extract the drug from the bark and needles of the rare Pacific yew tree. Taxol has proven effective in fighting ovarian and breast cancers unresponsive to other treatments according to the National Cancer Institute. The institute views this as an incredible discovery with tremendous implications for taxol production. ■

The Montana Science and Technology Action Agenda Released

In October of 1992, the Montana Science and Technology Advisory Council released The Montana Science and Technology Action Agenda. The agenda is the compilation of findings and recommendations from the industrial and research sector focus groups — animal agriculture, plant agriculture, communications and manufacturing technology and processes, energy resources, forestry and wood products, mineral extraction, basic research and biotechnology — identifying ways Montana's science and technology resources could work to Montana's benefit.



The Action Agenda builds on The Montana Science and Technology Policy and Plan released in 1991 and is an outline for success gleaned from the work of hundreds of key people from across the state who met in focus groups during the preceding year. The Action Agenda represents what the Council, based on the participation and recommendations of the focus groups, believes must be done within each of the industries represented to move Montana into the future in the context of a global economy. ■

Montana Science & Technology Alliance

Department of Commerce
46 North Last Chance Gulch, Suite 2B
Helena, Montana 59620
406-449-2778

Bulk Rate
U.S. Postage
Paid
Helena, MT
Permit No. 2

1200 copies of this public document were published at an estimated cost of 67¢ per copy, for a total cost of $801.15 which includes $601.15 for printing and $200.00 for distribution